**Data Mining and Learning Systems**

**Final Project Report**

**The project topic: GPT-2,Generative Pre-trained Transformer 2 for text generation**

**Introduction:**

The goal of GPT-2 is to solve the problem of analyzing language whether for translation,text summarization or text generation.

This problem is a challenging and important problem in deep learning to which there are

existing solutions but they don't produce satisfactory results.

GPT-2 **- Generative Pre-trained Transformer 2** is an [open-source](https://en.wikipedia.org/wiki/Open-source) [artificial intelligence](https://en.wikipedia.org/wiki/Artificial_intelligence) created by [OpenAI](https://en.wikipedia.org/wiki/OpenAI) in February 2019.

**Pre Proccess:**

* Loading Pre Trained Arabic and English model from Transformers.
* Preparing suitable data set for a specific task.

We found a data set on Harry Potter's books and poets in Arabic.

Training(fine tune):

* Training the pre trained model on our data sets
* For each epoch:

Calculate the backward propagation and adjusting better weights

The parameters we used for the training:

Epochs: 5

Batch size: 15

**Graphical user interface, diagram

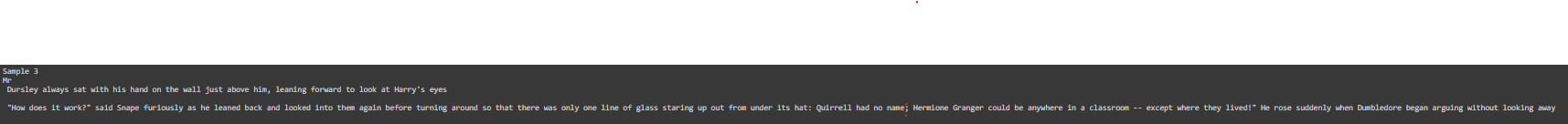
Description automatically generated**

We didn't find many models bigger than small so we used model small.

**Obtained Results:**

New Models for generating text from Harry Potter's books ,Arabic Poets.

Text

Description automatically generated****

**The projects conclusions:**

During our journy,we figured that Gpt2 is a powerful model that was trained on massive data set from the web,the results of gpt2 are very satisfying,we can fine tune the model to do a specific task. There is a new version Gpt3 which did some enhancement on Gpt2.

**References:**

<https://openai.com/blog/better-language-models/>

https://jalammar.github.io/illustrated-gpt2/